UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,577	05/14/2004	Itzhak Bentwich	050992.0202.CPUS02	3576

37808 7590 11/22/2006

ROSETTA-GENOMICS
c/o PSWS
700 W. 47TH STREET
SUITE 1000
KANSAS CITY, MO 64112

EXAMINER	
WOLLENBERGER, LOUIS V	

ART UNIT	PAPER NUMBER
1635	

DATE MAILED: 11/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/709,577	BENTWICH ET AL.	
	Examiner	Art Unit	
	Louis V. Wollenberger	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *1* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-24* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification/Sequence Compliance

The disclosure is objected to because of the following: This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the reason(s) set forth below or on the attached Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence And/Or Amino Acid Sequence Disclosures. The specification as filed does not comply with the requirements above, in particular 1.821(d) at least, because it contains nucleotide sequences of over 10 nucleobases each that are not identified by accompanying sequence identifiers.

For example, the sequences set forth at paragraphs 559-582, and 499. Similarly, several sequences are disclosed in figures 22, 23, 24 and 25 without corresponding SEQ ID NO: identifiers. This is but a sampling of the many sequences set forth in the instant application without SEQ ID NO: identifiers. Applicants are advised to review the entire application—claims, drawings, and specification—for complete compliance with the Sequence Rules.

Thus, the Examiner notes herein that the above listing of pages and figures which set forth examples in the specification of nucleotide sequences that require SEQ ID NO: is by way of illustration. In order to be fully responsive to this Office Action, Applicant should review this application in its entirety to ensure compliance with the requirements of 37 CFR 1.821 through 1.825 and to make all appropriate corrections.

Failure to comply with these requirements will result in ABANDONMENT of the application under 37 CFR 1.821(g).

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-11 and 20-23, drawn to a bioinformatically detectable isolated oligonucleotide, which anneals to a portion of a mRNA transcript of target gene, and which modulates or represses expression of said target gene, classified in class 536, subclass 24.5. Election of this group requires the further election of a single bioinformatically detectable oligonucleotide (i.e., a single SEQ ID NO), and a single target gene, corresponding to said oligonucleotide, as explained below.

II. Claims 12, 16, and 17, drawn to a method of treatment of a disease, comprising providing a material that modulates or inhibits the activity of a microRNA, and to methods thereof wherein the material is an oligonucleotide, classified in class 514, subclass 44.

III. Claims 13–15, drawn to a method for treatment of a disease, comprising providing a material that binds a segment of a messenger RNA and inhibits the expression of protein from said mRNA, and to methods thereof wherein the material is a microRNA, classified in class 514, subclass 44.

IV. Claims 18 and 19, drawn to a method for diagnosis of a disease, comprising assaying a microRNA, and to a method for detection of expression of an oligonucleotide, classified in class 435, subclass 6.

V. Claim 24, drawn to a method for bioinformatic detection of microRNA, classified in class 435, subclass 6, for example.

The inventions are distinct, each from the other because of the following reasons:

Group I is related to Groups II, III and IV as product and processes of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). With respect to Groups II and III, the product as claimed can be used in a materially different process of using that product. For example, the bioinformatically detectable isolated oligonucleotide may be used in a method of hybridization, to detect gene expression, which does not require using the oligonucleotide to treat a disease in animal or other organism, as in Group III. With respect to Group IV, the product may be used in a method of inhibiting gene expression in a cell or organism, which does not require using the oligonucleotide or its derivatives for assaying for miRNA expression or detecting the expression of an oligonucleotide, as in Group IV.

Inventions I and V are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions are not disclosed as capable of use together and have different effects. For example, Group I is drawn to an isolated oligonucleotide having known biological properties, whereas Group V is drawn to a bioinformatic method for identifying potential, endogenously expressed RNAs that are

complementary to and that may inhibit certain mRNAs. Accordingly, the inventions are unrelated and have different functions and effects.

Inventions II–V are directed to related methods. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the claimed methods are not disclosed as capable of use together, and they have materially different designs, modes of operation, function and effect. For example, Group II requires providing a material, such as an oligonucleotide, that modulates or inhibits the activity of a miRNA, whereas Group III requires providing a material, such as an miRNA, that binds and modulates an mRNA. Groups IV and V are drawn to biochemical methods of assaying oligonucleotide expression and bioinformatically identifying hairpin-shaped precursor miRNAs, which do not require treating a disease or providing oligonucleotides to animals or organisms afflicted with disease. For the same reasons, the inventions do not overlap in scope and there is nothing of record to show them to be obvious variants.

In addition, searching and examining each of these groups in a single application would present a serious burden on the examiner, since each group would require different keyword searches (i.e., different fields of search) and different considerations of the patent and non-patent literature with regard to novelty, obviousness, written description, and enablement.

Therefore, because these inventions are distinct for the reasons given above, and the searches required for each are divergent and not coextensive, and because a search and

examination of all of the Inventions in a single application would present a serious burden on the Examiner, restriction for examination purposes as indicated is proper.

Restriction to a Single Nucleotide Sequence and mRNA Target Gene

Should applicant elect to prosecute Group I, this Group is subject to further restriction as follows.

Pursuant to 35 U.S.C. 121 and 37 C.F.R. 1.141, the sequences recited in claims 1–6 and target genes recited in claims 5–11 are subject to restriction since they are not considered to be a proper genus/Markush. See MPEP 803.02 - PRACTICE RE MARKUSH-TYPE CLAIMS - If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the examiner must examine all the members of the Markush group in the claim on the merits, even though they are directed to independent and distinct inventions. In such a case, the examiner will not follow the procedure described below and will not require restriction. Since the decisions in *In re Weber*, 580 F.2d 455, 198 USPQ 328 (CCPA 1978) and *In re Haas*, 580 F.2d 461, 198 USPQ 334 (CCPA 1978), it is improper for the Office to refuse to examine that which applicants regard as their invention, unless the subject matter in a claim lacks unity of invention. *In re Harnish*, 631 F.2d 716, 206 USPQ 300 (CCPA 1980); and *Ex parte Hozumi*, 3 USPQ2d 1059 (Bd. Pat. App. & Int. 1984).

Broadly, unity of invention exists where compounds included within a Markush group (1) share a common utility, and (2) share a substantial structural feature disclosed as being essential to that utility.

The instant claims specifically claim several thousand bioinformatically detectable oligonucleotide sequences, which presumably target any number of genes such as those recited in claims 5–11, consisting of genes in Tables 12 and 14. The genes may be associated with any number of different diseases, including multiple sclerosis, Alzheimer's, prostate cancer, respiratory syncytial virus, and inflammatory bowel disease.

The instant sequences are considered to be unrelated, i.e., independent and distinct, since each sequence claimed is structurally and functionally independent and distinct for the following reasons: each sequence has a unique nucleotide sequence, each sequence targets a different and specific region of a structurally and functionally distinct mRNA, and, absent evidence to the contrary, each oligonucleotide, upon binding to its target, is expected to functionally modulate (increase or decrease) the expression of that target to varying degrees and to have different relative biological effects.

As such, the Markush/genus of sequences and target genes in the instant claims are not considered to constitute a proper genus, and are therefore subject to restriction.

Furthermore, a search of more than one (1) of the sequences claimed in the instant claims presents an undue burden on the Patent and Trademark Office due to the complex nature of the sequence searches in terms of computer time needed to perform the search and the subsequent analysis of the search results by the examiner. In view of the foregoing, one (1) oligonucleotide sequence along with one corresponding target gene is considered to be a reasonable number of sequences for examination.

Accordingly, applicants are required to elect one (1) bioinformatically detectable sequence. i.e., one SEQ ID NO:, and one target gene, if appropriate, from the instant claims. Note that this is not a species election.

Although this restriction requires election of a single nucleotide sequence, applicant should be aware that the Office's computer search systems will automatically search both the elected sequence and its complement. If the recited sequences are defined as sense sequences that have a counterpart antisense sequences, applicants are welcome to make their election as a sense/antisense sequence pair reciting a sense sequence and its corresponding antisense sequence as a search of the sense sequence of such a pair will automatically search the antisense sequence of the pair.

In the event of rejoinder of product and process claims, applicants are reminded that the process claims identified above depending from the product claims identified above must recite the same SEQ ID No and target gene to remain consonant with this restriction requirement.

Rejoinder

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder**. Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Louis V. Wollenberger whose telephone number is 571-272-8144. The examiner can normally be reached on M-F, 8 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Schultz can be reached on (571)272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LVW
November 17, 2006
Examiner, Art Unit 1635

SEAN McGARRY
PRIMARY EXAMINER
1635